EXHIBIT 4

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CORRIGENT CORPORATION,

        Plaintiff,

    v.

DELL TECHNOLOGIES INC. and DELL INC.,

        Defendants.

C.A. No. 22-496 (RGA)

JURY TRIAL DEMANDED

CORRIGENT CORPORATION,

        Plaintiff,

    v.

ARISTA NETWORKS, INC.,

        Defendant.

C.A. No. 22-497 (RGA)

JURY TRIAL DEMANDED

SUPPLEMENTAL DECLARATION OF DR. JAMES OLIVIER
REGARDING CLAIM CONSTRUCTION

Dr. Olivier's Supplemental Declaration Regarding Claim Construction

TABLE OF CONTENTS

TABLE OF EXHIBITS[1]

Exhibit No.	Description
4A	IEEE Std 802.1Q-1998, Virtual Bridged Local Area Networks, December 8, 1998
4B	Lasserre et al. Virtual Private LAN Services over MPLS, IETF draft-ietf-12vpn-vpls-1dp-08.txt, November 2005
4C	DeCusatis, Fiber Optic Data Communication Technological Trends and Advances, Academic Press, 2002
4D	RCA Engineer, Vol. 30, No. 1, Jan./Feb. 1985
4E	Excerpt of Leon Bruckman Deposition Transcript taken on November 2, 2023 in *Corrigent Corporation v. Cisco Systems, Inc.*, 6:22-cv-00396 (W.D. Tex.)
4F	IEEE Std. 896.1-1991, *IEEE Standard for Futurebus+ - Logical Protocol Specification*, September 26, 1991

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[1] Exhibits 4A-4F of my declaration are attached to the Declaration of Andrew Mayo, which is being served on Defendants simultaneously with this document.

Dr. Olivier's Supplemental Declaration Regarding Claim Construction

I, Dr. James Olivier, declare:

I.   INTRODUCTION

1.   I submit this declaration ("Supplemental Declaration") as a supplement to my Declaration in Support of Corrigent's Opening Claim Construction Brief ("Opening Declaration") submitted in this matter on January 9, 2024. Since I submitted my Opening Declaration, I have had the opportunity to review additional materials. These materials include the claim construction briefing submitted by Dell Technologies Inc., Dell Inc. ("Dell"), and Arista Networks, Inc. ("Arista") (collectively, "Defendants") on February 8, 2024, the Rebuttal Declaration of Dr. William R. Michalson ("Michalson Decl.") dated February 6, 2024, all of the exhibits attached to Dr. Michalson's declaration, and all of the exhibits referenced herein. Nothing in Dr. Michalson's declaration or the Defendants' Opening Brief have caused me to change any of the opinions in my Opening Declaration.

2.   I continue to be retained as an expert witness by counsel for Corrigent Corporation ("Corrigent"). In light of my review of the additional materials I have reviewed above, I have been asked to provide supplemental expert opinions in the above-captioned matter regarding U.S. Patent Nos. 6,957,369 ("'369 Patent") and 7,593,400 ("'400 Patent") (collectively, "patents-in-suit").

3.   This Supplemental Declaration provides opinions relevant to claim construction of certain claim terms or phrases of the '369 and '400 Patents, from the perspective of a person of ordinary skill in the art ("POSA").

4.   I continue to reserve the right to consider additional information as I become aware of it and to supplement this Supplemental Declaration accordingly.

II.   BACKGROUND AND QUALIFICATIONS

5.   Details of my professional qualifications and background are set out in my Opening Declaration. That information is incorporated by reference herein.

6.   A copy of my curriculum vitae with my publications and technical consulting experience is provided as **Ex. 2A**.

III.   COMPENSATION

7.   I am being compensated for my time at my standard consulting rate, which is $650.00 per hour. That rate also applied to my work in connection with my Opening Declaration. My compensation is not dependent in any way upon the outcome of this matter and in no way affects any findings or opinions herein.

IV.   PERSON OF ORDINARY SKILL IN THE ART

8.   I have reviewed Dr. Michalson's definition of the appropriate level of ordinary skill in the art. Michalson Decl. ¶ 16. While our definitions of the level of ordinary skill in the art are similar, there are aspects of Dr. Michalson's definition that are indefinite in my opinion. For example, it is unclear what Dr. Michalson would consider a "high-performance computer networking." Additionally, it seems that Dr. Michalson's level of ordinary skill is higher and narrower level of skill than my definition, as Dr. Michalson requires a degree in electrical engineering (only) as well as the aforementioned "background in high-performance computer networking." Regardless, I consider myself an expert under both definitions.

V.   ADDITIONAL LEGAL PRINCIPLES APPLIED IN THIS DECLARATION

9.   I incorporate the legal principles applied in my Opening Declaration by reference into this Supplemental Declaration.

VI.   '369 PATENT

A.   "main module"

10.   I have reviewed Dr. Michalson's discussion of the "main module" limitation. He does not dispute that a main module is indeed "a module that has a connection to one or more

subsidiary modules via one or more data lines or traces," and provides no analysis suggesting that this critical aspect of Corrigent's construction is incorrect.

11.   I note that Defendants completely abandoned their initial construction, requiring a "switch for multiplexing." *See* D.I. 72 at 6. Dr. Michalson does not even attempt to support the "switch for multiplexing" construction, which in my opinion Defendants implicitly conceded was incorrect. Michalson, ¶ 26. The specification never teaches that the main module combines, only that it multiplexes in certain preferred embodiments described by reference to Figure 1 of the '369 patent. '369 Patent at 4:43-46, 4:54-56. I disagree that "multiplexing" is the same thing is "combining," and that the invention is restricted to even the "multiplexing" embodiments disclosed in the patent. Indeed, the specification states that the system is not restricted to any particular type of system or to the preferred embodiment. '369 Patent at 6:54-67. I note further that the claims contain no language reflecting a "combining" requirement.

12.   Furthermore, I note that the specification confirms that the main module "*typically* includes a switch for multiplexing among subsidiary modules," underscoring that the "multiplexing" (e.g., combining data) is not necessarily a requirement. '369 Patent at 1:30-32. Similarly, the "aggregation" of traffic is described with respect to the Figure 1 embodiment, and is also performed in reference to the optional switch, and is thus not necessarily required as functionality within the main module. '369 Patent at 5:1-3 ("[I]n this embodiment, switch 28 aggregates"), 5:21-24 ("aggregated by switch 28"). The mere disclosure of an embodiment that can aggregate data from multiple other modules does not support reading such a limitation into this claim term.

13.   To the extent that Dr. Michalson asserts that Corrigent's construction "fails to give meaning to the word 'main' in 'main module,'" I disagree. In my opinion, the claim language

accounts for and circumscribes the relevant differences between the "main module" and "subsidiary module" in each claim, including details on the modules' interconnections and the test traffic that travels amongst the modules. The claim language, in other words, repeatedly recites distinct requirements that apply to the "main module" and "subsidiary module," respectively. Thus, Corrigent's construction does not eliminate differences between the main and subsidiary modules.

14.   Dr. Michalson states that I do not dispute "that a 'main module' is limited to a hardware-based implementation" in paragraph 22. But to be clear, I disagree that "hardware" should be recited in the construction of main module, and I agree with Corrigent's construction that does not include that term. The main module can consist of hardware, but it can comprise software, including software that runs on main modules that include a system control processor (labeled 42). Moreover, the POSA would understand that hardware modules can be configured virtually in software, and the claims (particularly claim 1 and the dependent method claims) do not recite any hardware components. Consistent with this fact, the '369 Patent discloses the use of virtual connections that interconnect main and subsidiary modules. '369 Patent at 5:5-9, 6:10-16. It is my opinion that Defendants' proposal could confuse and mislead a jury.

B.   "subsidiary module"

15.   I have reviewed Dr. Michalson's declaration on this claim term. In my opinion, there is nothing in the claim language, specification, or prosecution history that demonstrates that a subsidiary module must be under the control of a main module.

16.   In my opinion, Defendants' construction is based on generic non-technical dictionary definitions, which do not support improperly rewriting the claims here. Indeed, Defendants' definitions do not demonstrate that the POSA would understand that a control

relationship is required, and indeed suggest that something "subsidiary" might merely "assist," "aid or supplement." Ex. B at 1527; Ex. C at 1896. If anything, this confirms that the POSA would understand can merely be a module that is not controlled by a main module, but rather modules that are interconnected or be supplemental to the main module. Such a role is consistent with Corrigent's construction and is consistent with the claim language, and the claim language does not support Defendants' construction. In my opinion, the only thing that the claim language suggests *might* control a subsidiary module is a system control processor—not a main module— and that particular requirement is only recited in dependent claim 16. In claim 15 from which claim 16 depends, the "system control processor" is recited in a separate limitation from the "main module," underscoring that the system control processor need not be part of the main module. Moreover, the "system control processor," is not even recited in independent claim 1 or any of the claims that depend from it, as Dr. Michalson admits. This means that the POSA would understand that a subsidiary module need not be controlled by a main module.

17.   Dr. Michalson states that I do not dispute "that a 'subsidiary module' is limited to a hardware-based implementation" in paragraph 25. I disagree for the same reaons I gave with respect to "main module."

C.   "backplane"

18.   I have reviewed Dr. Michalson's opinion on this claim term. I maintain my opinion that the ordinary meaning of "backplane" to a POSA, as informed by the specification, is not limited to a printed circuit board implementation.

19.   In paragraph 32, Dr. Michalson references a definition in the *FutureBus+* specification document (which I reviewed). The definition he relies on defines a backplane as an "[e]lectronic circuit board and connectors used to interconnect modules together electrically." This definition of backplane does not require a "*printed*" circuit board as Defendants attempt to argue.

Further, Figure 1 of the IEEE Std. 896.1-1991 – Logical Protocol Specification for FutureBus+ illustrates that a Futurebus+ system is not simply "a printed circuit board into which modules may be inserted." Ex. 4F, IEEE Std. 896.1-1991 at 20. I maintain that my discussion of FutureBus+ as being "loosely coupled" relates to the architecture including the backplane and not just to processors. Thus, both the definition and the disclosure of the IEEE specification reinforce that a construction of plain and ordinary meaning or, alternatively, "hardware used to establish interconnections between modules," is more appropriate than Defendants' narrow construction.

20.   Next, in paragraphs 33 and 34, Dr. Michalson asserts that the passage I referenced in U.S. Patent No. 5,420,095 to Cantrell does not support my argument that FutureBus+ does not require a printed circuit board. Specifically, he asserts that the portion of Cantrell I quoted refers to a computer architecture, rather than the hardware itself. I disagree. The hardware of Futurebus+ supports both loosely coupled and tightly coupled architectures. As Cantrell states, "[b]oth loosely coupled and tightly coupled compute paradigms are supported via the parallel protocols and in the message-passing and cache-coherence protocols." Cantrell at 1:35-37

21.   In paragraph 35, Dr. Michalson asserts that my characterization of FutureBus+ is "misleading." But it is Dr. Michalson seeks to confuse the issues when he suggests that the passage I referenced above is not referring to a backplane hardware when it clearly is. As I describe above, the Futurebus+ specifications teach a POSA that a backplane is an "[e]lectronic circuit board and connectors used to interconnect modules together electrically which is capable of being either tightly coupled or loosely coupled."

22.   While Dr. Michalson attempts to use the incorporated Ke reference in paragraph 36, the '369 Patent states that the Ke reference merely provides "another example" of testing backplane-based interconnections. '369 Patent at 1:48-50. Thus, even if Ke references circuit

boards, it is my opinion that that reference does not limit the meaning of backplane in the '369 Patent.

23.   Additional extrinsic evidence also reinforces that a "backplane" is not limited to a printed circuit board, and that backplanes are not limited to connections using printed circuitry, but can also include connections using cables or wires. Ex. 4C (Fiber Optic Data Communication, Casimer DeCusatis, 2002) at 231-232 (describing fiber-cabled backplane); Ex. 4D (RCA Engineer, Jan./Feb. 1985) at 56 (describing "backplane connectors" as being "25-pair connectorized cables"). In my opinion, even one of Defendants' definitions underscores that a PCB is not required because it states that a backplane can be simply "[t]he physical mechanism by which signals are routed between agents," consistent with Corrigent's construction. Ex. H at 79 (entry 5); Thus, extrinsic definitions reinforce that the POSA would understand that backplanes are not limited to PCBs.

24.   I note that Defendants attempt to inject a requirement that a backplane is necessarily "in the back of communications equipment." It is my opinion from the perspective of a POSA that the use of the word "back" within backplane is not intended to circumscribe the location of a backplane. There is nothing in the specification that suggests that the "backplane" must be in a particular location within communications equipment, The concept of a backplane is fundamentally about facilitating interconnection, and in my opinion its physical location is not relevant to the patentability of the claims.

D.   "idle line / idle trace"

25.   I have reviewed Dr. Michalson's discussion of "idle line" and maintain my opinion that an "idle line" is one that has spare capacity for testing or that is not completely flooded with traffic. In my opinion, an object of the invention is to "provide improved methods and systems for non-intrusive testing." '369 Patent at 1:57-58. The specification teaches failure testing that is

non-intrusive and nondisruptive, and that testing should occur on lines that have "spare capacity." *Id.* at 2:26-29, 5:26-30. Such teachings are consistent with Corrigent's proposed construction of "idle line" as being lines that have at least some spare capacity for testing, and are not flooded with traffic.

26.   Dr. Michalson attempts to argue that the patent's reference to "Hidden Failures" in the title and in certain portions of the specification supports Defendants' construction. In my opinion, to the extent "hidden failure" are relevant, the POSA would understand that any failure that is as of yet unknown in a networking system is a hidden one, including failures detected on lines with spare capacity. Thus, any failures that are discovered on lines with spare capacity were hidden before they were detected. Moreover, I note that the claim language makes no reference to "hidden failures."

27.   Dr. Michalson draws a contrast between "idle" lines and "active" lines, but these disclosures merely relate to a "preferred embodiment of the present invention." '369 Patent at 6:47-53, 2:48-50. Notably, the claim language of the '369 patent never contrasts idle and active lines—indeed, the claim language does not reference "active" lines at all.

28.   Dr. Michalson, like Defendants, ignore that the specification refers to non-intrusive testing where there is "spare capacity," and instead primarily argue against Corrigent's "spare capacity" construction based on extrinsic evidence. But generic, cherrypicked definitions of "idle" from non-technical dictionaries are irrelevant and do not control over the specification. Even if considered, I note that one of Defendants' definitions defines idle as "not spent or filled with activity," Ex. C at 951 (entry 2), which is consistent with Corrigent's construction. One of the inventors of the '369 patent also testified that the '369 patent relates to failure testing over lines that are "not being used or it's not being fully used," and lines that have "some spare capacity."

Ex. 4E, Bruckman Dep. at 78:6–79:5. Ultimately, it is my opinion that while an "inactive" line that has zero traffic may be an *example* of idle line, there is no evidence that the patentee intended to limit "idle lines" to that example.

29. Finally, Dr. Michalson also suggests that Corrigent's construction "would eliminate the purpose of the patent and claim testing of all lines." Michalson, ¶ 39. But that is not true. Under Corrigent's proposed construction, lines that lack "spare capacity" are not idle and therefore not candidates for the claimed failure testing.

E. "a system control processor"

30. In my opinion, Dr. Michalson's attempt to limit a "system control processor" as being a processor that is "in" the main module is improper and is just an attempt to read the specification into the claims. His only support for this construction is in reference to the embodiment shown in Figure 1. Dr. Michalson also ignores claims 15 and 21, which reinforce that that the "main module" and "system control processor" are separate claim elements that appear in separate limitations as part of a larger "modular electronic apparatus." The claims do not state that the system control processor must be within the main module.

F. "order of steps"

31. I maintain the positions expressed in my original declaration regarding the "Order of Steps" construction. I note that Dr. Michalson does not dispute that the configuration and selection steps of the patent could occur simultaneously or near-simultaneously. He states that it is "impossible for instruction and configuration to occur at the same time . . . because those steps require the lines to be chosen first," but he does not provide any explanation why, from a technical standpoint, that selections of lines and corresponding linkages of ports cannot be performed simultaneously as part of the same configuration sequence. His response is entirely conclusory. In my opinion, the claim language merely refers to steps that should be carried out to perform the

claimed failure testing, and does not proscribe a particular order that the steps must occur. That certain claim language overlaps between claims does not mean that a particular order is required. Defendants' conclusory argument to the contrary ignores how software works, and ignores that the purpose of the patent is to ensure that the claimed failure testing occurs, as claimed.

32.   With regard to the apparatus claims, my understanding is that a system control processor must be "operative" to perform certain functionality. It is my opinion that this "operative" claim language (which Dr. Michalson ignores in paragraph 50) underscores that an order of steps is not required, because the question is simply whether a device has a system control processor that is capable of carrying out the claimed failure testing.

VII. '400 PATENT

A. General MAC Forwarding and Learning in the Context of the Claims of the '400 Patent

33.   It is my opinion that the POSA would generally be aware of MAC bridges, MAC

forwarding, and MAC learning. In fact, the background of the '400 patent provides a helpful

explanation of the general knowledge of the MAC learning process that the POSA would be aware

of:

> MAC bridges maintain a forwarding database (FDB) to map destination MAC addresses of the packets they receive to bridge ports. The bridge builds the forwarding database by means of a learning process, in which it associates the source MAC address of each incoming packet with the port on which the packet was received. When the bridge receives an incoming packet whose destination address is not found in the database, it floods (i.e., broadcasts) the packet through all its available ports, except the one through which the packet arrived. Other MAC bridges that do not recognize the destination address will further flood the packet to all the relevant ports. Through the flooding mechanism, the packet will eventually traverse all interconnected bridges at least once, and will ultimately reach its destination.

'400 patent, 1:33–46.

34.   Relatedly, the POSA would be aware that when a packet is received by a switch,

certain ingress functions or processing takes place. Similarly, the POSA would be aware that when

a packet is being prepared to be transmitted by a switch, certain egress functions or processing

takes place. *See, e.g.*, '400 patent, 3:7–10 ("Each of the line cards may typically serve as both

ingress and egress for data packets and has a respective MAC forwarding database (FDB) that is

shared by the ingress and egress functions.")

35.   Similarly, the POSA would also be generally aware of link aggregation:

> Link aggregation (LAG) is a technique by which a group of parallel physical links between two endpoints in a data network can be joined together into a single logical link (referred to as the "LAG group"). Traffic transmitted between the endpoints is distributed

> among the physical links in a manner that is transparent to the clients that send and receive the traffic. For Ethernet networks, link aggregation is defined by Clause 43 of IEEE Standard 802.3, Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications (2002 Edition), which is incorporated herein by reference.

'400 patent, 2:37–47.

36.   In my opinion, the POSA would be familiar with the concept of virtual LANs (VLANs). The '400 patent also references IEEE Standard 802.1Q: Virtual Bridged Local Area Networks, which the POSA would recognize as a well-known networking standard.

37.   In my opinion, the POSA would be familiar with the concept of virtual private networks (VPNs).

38.   In my opinion, the POSA would be familiar with the concept of virtual private LAN services (VPLS). The background of the '400 patent explains that "Every node in a VPLS acts as a virtual bridge. A virtual bridge node has "virtual ports," which are the endpoints of PWs that are part of the VPLS. The interfaces to which the users are actually connected are physical ports at the network edges. Both virtual and physical interfaces are treated identically from the point of view of frame forwarding and address learning." '400 patent, 2:22–28. As the '400 patent describes, one example of "a Layer 2 virtual private network (VPN)" is "a VPLS." '400 patent, 3:5–7.

39.   I include this information because, in my opinion, it is important to determine the scope of the claims from the perspective of the POSA.

B. General Comments on the Scope of Independent Claims 1 and 11

40.   I note that the steps of claims 1 can generally be divided into two groupings. First, steps [1A] through [1C] articulate a configuration in which the novel method of MAC synchronization and learning is implemented. Second, steps [1D] through [1H] describe various

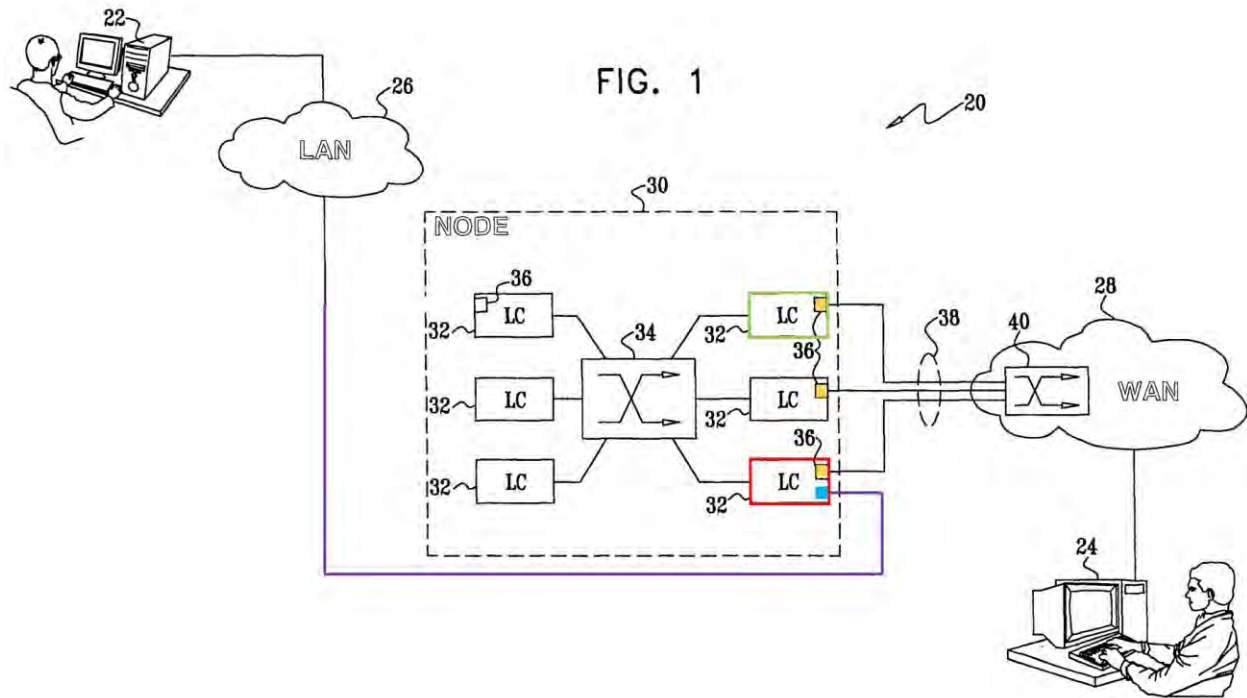actions taken regarding the MAC address checking, learning, and synchronization described by the patent.

41.   I disagree with Dr. Michalson that the POSA would understand that the independent claims require two distinct sets of line cards. Michalson Decl., ¶ 52. While the claim recites "at least first and second line cards" as well as "a plurality of conjoined member line cards," in my opinion, nothing in the claims requires these line cards to be distinct and separate. For example, in my opinion, the POSA would understand that the first line card could be a member line card, in certain embodiments. I provide an example illustration explaining this embodiment below.

42.   I also disagree with Dr. Michalson that, just because the claims do not recite that the first line card has a FDB, that the first line card cannot be a member line card with a respective FDB. In my opinion, the POSA would understand that the first line card could be a member line card with a respective FDB, in certain embodiments.

43.   After reviewing Dr. Michalson's declaration, it is apparent that Dr. Michalson and the Defendants are restricting the claims to a scenario in which the claimed "first line card" is only and always the egress line card. Michalson Decl., ¶¶62–64. In my opinion, the "first line card," in certain embodiments, can be both the ingress and egress line card.

44.   In my opinion, in the embodiment wherein the claimed first line card is both the ingress line card and the egress line card, the MAC destination address checking and MAC source address checking are both checked against an FDB of the claimed first line card.

45.   To help explain my opinion, I have created an annotated version of Figure 1 of the '400 patent, with a slightly different arrangement than the version in the patent. This arrangement is still consistent with all the network node configuration limitations of claims 1 and 11.

FIG. 1

46.   In this example, the source is 22, and the destination is 24. The line card outlined in red is the claimed "first line card." The first line card (red) has a port in blue that is connected to LAN 28 (see purple line connecting), and another port in orange that is part of a plurality of ports joined together in the LAG 38. The line card outlined in green is the claimed second line card. While I show it as another member line card (i.e., it has a port connected to the LAG), the POSA would understand that any of the other line cards could be the claimed second line card. As such, in my opinion, the arrangement depicted above would satisfy steps [1A] through [1C] of claim 1.

47.   Turning then to an example where the first line card (red) is both the ingress and egress line card, the POSA would understand that a data packet from the source 22, destined for destination 24, could be received at the blue port on the first line card. There, as part of ingress processing, the MAC destination address and MAC source address would get checked. The MAC destination address is checked so that the first line card (or a processor on this line card) would

know where to forward the data packet. If the MAC destination address of the data packet is unknown, the first line card would initiate a flood, transmitting the packet to all the ports except for the blue port (since that is the port in which the packet was received). However, as explained in the '400 patent, in the case of the LAG, the packet would only get sent across one of the orange ports, such as the orange port on the first line card. If the MAC destination address was already known, for example if the first line card knew of the association between destination 24 and the LAG 38 (the ports 36 of the LAG 38 are those that are grouped together to form a single logical link), then the data packet would just get transmitted to WAN 28 via at least one of the ports of the LAG, such as the orange port on the first line card.

48.   As such, in that example, the first line card can be both the ingress and egress line card, and the MAC source and destination address checking occurs on the FDB of the first line card, all within the scope of claim 1, as understood by the POSA.

C. "said FDB"

49.   Nothing in Dr. Michalson's declaration changes my opinion that, the POSA reading claims 1 and 11 in light of the specification and intrinsic record would have understood the "said FDB" claim language to have been reasonably certain because it simply refers to the FDB of the first line card.

50.   As I noted previously, Claims 1 and 11 recite "said FDB" three times. All three of those times occur in the data packet flow portion of the claims, namely steps [1F], [1H], and [1G]. The term in question appears in step [1F] of claim 1, which relates to the FDB that is checked for the MAC destination address. In claim 11, the term "said FDB" in the context of the MAC destination address check appears near the end of the claim.

51.   I disagree with the statement in Defendants' Opening Brief that "MAC destination address" "refers to the MAC address of the sender of the data packet." Answering Brief, at 18 n.5.

In my opinion, that sentence makes no sense, as the destination addresses is the address of the *destination* of the packet, not the source.

52.   In my opinion the POSA would understand that "said FDB" in step [1F] is the same FDB throughout that portion of the claim, and thus, "said FDB" of the MAC destination address checking step [1F] would be understood as "said FDB of the first line card."

D. "virtual media access control (MAC) bridge"

53.   Nothing in Dr. Michalson's declaration changes my opinion that the POSA would understand the meaning of "virtual media access control (MAC) bridge" with reasonable certainty in the context of the '400 Patent.

54.   In my opinion, Dr. Michalson takes the three words "virtual MAC bridge" and attempts to evaluate them in a vacuum. However, in my opinion, in the context of the claims and specification of the '400 patent, the POSA would understand the plain and ordinary meaning of the term "virtual MAC bridge" is an instance of the MAC bridges described in the patent used in a virtual network. The claims provide helpful context to the POSA, never referring to "virtual MAC bridges" in isolation, but instead describing how the virtual MAC bridges are operating in a Layer 2 data network to forward packets. '400 patent, claims 11, 8, and 18. As I previously explained, in the context of the claims, the POSA would understand that the virtual MAC bridge is a MAC bridge that serves virtual private networks.

55.   The POSA would recognize that the patent describes numerous virtual networks, e.g., virtual private networks (VPNs), virtual local area networks (VLANs), and virtual private LAN services (VPLS) (*see, e.g.*, '400 patent, 2:18–36 ("Every node in a VPLS acts as a virtual bridge."), 5:53–56 ("A Layer 2 VPN, in the form of a VPLS, is provisioned in system 20 so as to connect MAC user terminals in different parts of the network, including exemplary terminals 22 and 24."), the patent describes MAC bridges for virtual networks, which would be virtual MAC

16

bridge (*see, e.g.*, '400 patent, 2:18–36 ("Every node in a VPLS acts as a virtual bridge.")). Moreover, the '400 patent specifically points and cites to IEEE 802.1Q (*see* '400 patent, 7:3–11), which is a networking standard that is titled "***Virtual Bridged*** Local Area Networks." (emphasis added). Even without the citation to IEEE 802.1Q, the POSA would be knowledgeable of IEEE 802.1Q. The scope of that standard describes that the standard "specifies a general method for the operation of MAC Bridges that support the construction of VLANs." Ex. 4A, IEEE 802.1Q, pg. 1. IEEE 802.1Q defines Virtual Bridged LANs as "A Bridged LAN in which the existence of one or more VLAN-aware Bridges allows the definition, creation, and miniatous of VLANs." *Id.* at 21. In my opinion, the POSA would be well-aware of VPNs, VLANs, VPLS, and virtual bridges/switches (such as those described in IEEE 802.1Q). Another example in the patent of a virtual bridge in a VPLS network is the virtual switch, which is described in "Virtual Private LAN Services over MPLS" (Lasserre et al., IETF draft-ietf-12vpn-vpls-1dp-08.txt, November 2005 (attached as Ex. 4B) which is incorporated by reference in the '400 patent. '400 patent, 2:9–17. Ultimately, I disagree with Dr. Michalson that the '400 patent "provides no guidance on the scope of the term." Michalson Decl. ¶ 59. The POSA would that the '400 patent claims and specification provides helpful context.

56.   In my Opening Declaration I point to RFC 4026 as one example of a discussion of virtual switches. But again, there are numerous examples in the field, such as those described in the patent.

57.   In my opinion, after consideration of the context provided by the claim language and the specification, including I mention above, the POSA would understand the meaning of "virtual media access control (MAC) bridge" with reasonable certainty.

E. "order of steps"

58.   Nothing in Dr. Michalson's declaration changes my opinion regarding the order of steps in Claim 1 of the '400 patent.

59.   I disagree with Dr. Michalson that the records of the FDB of the first line card cannot be checked before the conveying step. In particular, this suggestion ignores the possibility that the claimed line card is the ingress line card and the egress line card.

60.   In my opinion, the POSA would understand that in certain embodiments, the first line card could be both the ingress and the egress line card, and in those situations, the records of the FDB of the same, "first line card" would be checked for associations of the MAC destination and source addresses.

F. "conveying … said received data packet … to at least said first line card for transmission to said MAC destination address / said ingress line card conveys said data packet … to at least said first line card for transmission to said MAC destination address"

61.   Nothing in Dr. Michalson's declaration changes my opinion regarding this claim term.

G. "providing for each of said member line cards a respective forwarding database (FDB)"

62.   Nothing in Dr. Michalson's declaration changes my opinion regarding this claim term.

*   *   *

63.   I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Date: February 22, 2024

James Olivier Ph.D.
James L. Olivier, Ph.D.